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AMERICAN GAS ENGINEERING JOURNAL

FORMERLY

AMERICAN GAS LIGHT JOURNAL

VOL. CXI., No. 1
WHOLE No. 3200

NEW YORK, SATURDAY, JULY 5, 1919

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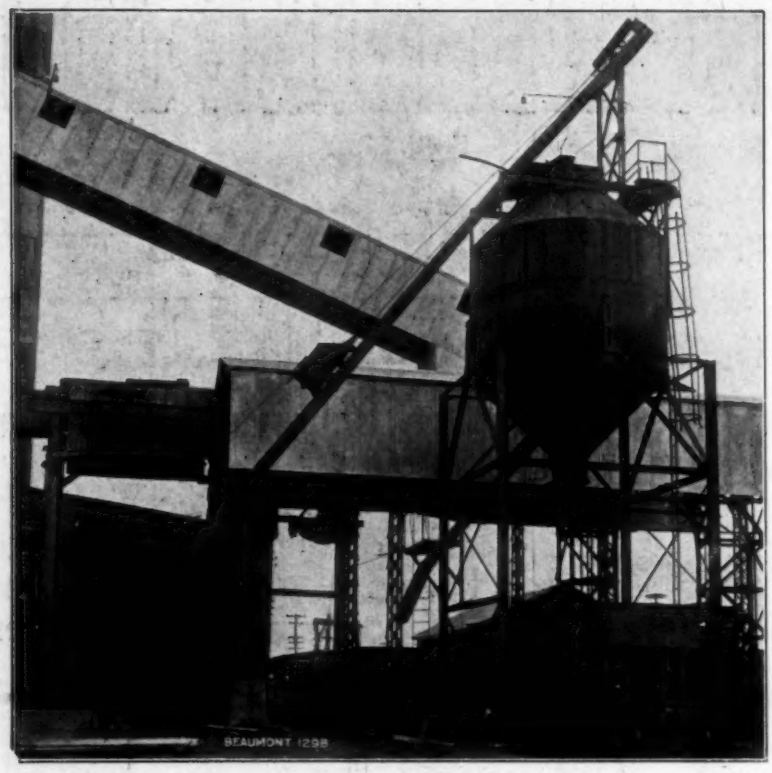

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AMERICAN GAS ENGINEERING JOURNAL. July 5, 1919. Vol. CXI, No. 1. Published Weekly by American Gas Light Journal, Inc., New York, N. Y. Subscription Price $3 per Year; $4 Canada; $5 Foreign.
Entered as second-class matter January 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

American
Gas Engineering Journal

FORMERLY THE AMERICAN GAS LIGHT JOURNAL

Vol. CXI, No. 1 NEW YORK, JULY 5, 1919 Whole No. 3200

With the Smallest Mammoth Hatcheries Using at Least 500,000 Cu. Ft. in the Spring or Summer Months Incubator Business Looms Up Well as an Industrial Field for Gas

Why Gas Has High Recommendations as a Fuel for the Artificial Hatching of Hens Eggs—Possibilities of the Market and Possibilities for Improvement in Equipment

By GILBERT C. SHADWELL

About a year ago the writer prepared an article, which was published in THE AMERICAN GAS ENGINEERING JOURNAL, covering the adaptation of small household incubators to gas. That short feature evoked so much interest that the writer has been requested to enlarge on the subject so as to embrace the equipments of greater capacity.

Let nobody consider that the business is not worth having. The load is steady day and night, lasting at least for six or eight months of the year in the spring and summer and sometimes it is a full year's load, day and night for twelve months. That is one reason why it is worth while.

One single mammoth incubator alone usually means about an average of a quarter of a million cubic feet of gas a year and even more in the older and larger types. Each brooder means that much again or more and few concerns in the hatching business confine themselves to one unit. Apart from this, however, the arguments in favor of gas are clean cut and very strong.

No Heat that Is So Even

Firstly, provided a gas governor is in the house there is positively no heat which is so even. The supply is always available and unlimited and there is no smell from the gas consumed.

Oil leaves a distinct odor, which is not only disagreeable, but is bad for the organisms in the eggs. Oil lamps need refilling and adjusting constantly and lack of oil or poor adjustment, may ruin the hatch.

If the kerosene gets onto the eggs it may injure them and the injury may be irreparable.

Gas needs no storage space and is about the safest fuel there is for these purposes. Kerosene can be quite dangerous. It needs storage space and you have to pay for it before you use it as a rule. Gas is paid for after it has been used

A score of other reasons will immediately occur to gas men after familiarizing themselves with the equipment involved.

As the former article on the subject of incubation dealt mainly with the construction and operation of small machines only, it may be desirable to say a few words on the matter of incubation proper.

The Process of Incubation

Life is dependent, for its awakening and maintenance, upon the influence of certain chemical and physical factors among which, heat and moisture may be regarded as the chief. It is therefore obvious that any method of incubation must provide for a due degree of temperature and moisture. And this degree must be one within limits, for, while all organisms are more or less plastic and can acclimate themselves to a greater or less range of variation in their physical environment, there is a given degree of variation at which the processes of life in each species proceed most favorably. It is this particular degree, which differs, for different species, which must be attained if artificial incubation is to be successfully conducted. That is to say, the degree of temperature and moisture within the incubation chamber (i. e., the drawers, shelves, etc.) must remain uniform throughout the period of incubation if the best results are to be obtained. It is not easy to reach all of these conditions unless the several factors involved are care-

fully understood and taken into consideration because there are several disturbing factors which will later be apparent and particularly so to those who have studied re-circulation drying and similar problems. The most important of these are given as follows:

The chief causes which go to make the temperature within the incubator variable are the changes of the outer air, and these are only partly corrected by thermostatically controlling the room temperature. Then there are fluctuations in the flame temperature of the oil lamp which can be taken care of only with difficulty.

If, however, a gas burner is employed and a governor is added in the line, the improvement will be very marked. If oil is used the gradual diminution of the oxidizing power of the flame and wick (if one be used) is a detriment. Again the necessary opening of the incubator chamber either for airing or for supplying moisture when this is necessary all tends to reduce the temperature. Incubators of the mammoth type however, are necessarily more free from these various imperfections than those of small capacity. However, there is another equally important though less obvious source of disturbance, and this resides within the organism, undergoing incubation.

In the case of the baby chick in embryo at about the ninth or tenth day of incubation there are very important changes occurring. Between this period and the fourteenth day the embryo becomes relatively large and there is a temporary breathing or "respiration" organ called the "allantois," together with its veins, which increases greatly in size. As a consequence. the breathing processes are able to proceed with greater activity and the chemical processes of oxidation thus increased necessarily, largely augment the amount of heat which the chick in embryo produces. So it will be clear to readers that an incubator, in order to be successful has to be capable af adjusting itself to this increased *internal* temperature. How this is accomplished in the various equipments falling under the category of this article will be seen later.

Need of Air

The drawers in the compartments of the incubators are usually packed as closely as possible with eggs. Do not forget that the eggs are living structures and need air. This necessitates some method of direct ventilation, and this in turn will, under ordinary conditions, increase the rate of evaporation from the interior surface of the egg. Hence, unless this evaporation be checked the eggs will become far too dry from the tenth day onward when moisture is a most important factor. How this point is taken care of will be dwelt upon after the different mammoth machines have been explained. There is apparently a certain oily secretion which the setting hen diffuses over the eggs which seems to retard evaporation at the critical period. This oil seems to allow the oxygen of the air to pass through it and hence allows the breathing of the chick to continue.

Artificial Hatching Goes Back to Early Times in China and Egypt

Artificial incubation on a large scale is no novelty as it was undoubtedly known to the Chinese and to the Egyptians in pre-dynastic times. The writer has been reliably informed that on the Egyptian Delta to-day the trade of artificial hatching is traditionally transmitted from father to son and hence confined to certain families. The secrets of the process are guarded with an almost religious zeal and the individuals are sworn not to divulge the process. However, as far as has been ascertained, the equipment consists of a large chick building, called a "Mamal" which includes some four large ovens or compartments each of such a size that several men could be contained in it. In this respect the plant is a counterpart of our modern mammoth machines. These ovens are in pairs. The eggs are placed in the middle of the floor by the ovens and in gutters around the sides, fires are lighted. The degree of heat is attained, it would seem, purely by long practice. When the right heat has been reached the entrance hole is plugged up and after the tenth to the twelfth day the fires are discontinued. Each "Mamal" will contain about 40,000 to 80,000 eggs. It is estimated that these people hatch some 100,000,000 eggs every year so that they are not so very far from being successful.

Mammoth Incubators by No Means of Uniform Design

Regarding the construction of the mammoth incubators of to-day it would have been considered that. being the result of evolution from the smaller sizes they would be more or less of uniform design. Nothing, however, is further from the truth. In fact. there is so great a variety in the details of construction that it is difficult to arrange a classification of mammoth or any other incubators which shall include them all.

Considering the method by which they are regulated and heated we have the following rather rough series of classifications:

Fig. 1—General view of recent design of mammoth incubator

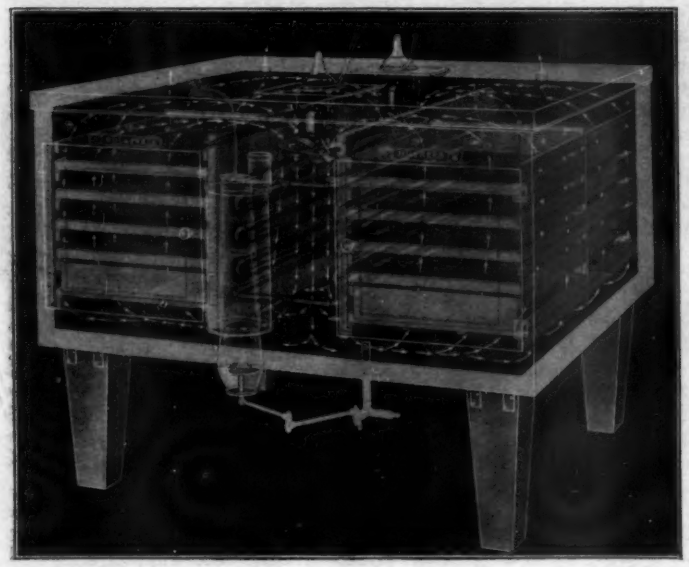

FIG. 2—PHANTOM VIEW OF MAMMOTH INCUBATOR SHOWING CONSTRUCTION

(1) "Hot Water" or "Tank" types—heated by gas or kerosene as a rule.

(2) "Hot Air" types—heated by gas, kerosene or electrical supply generally.

(3) "Direct Heated" types—usually heated by electricity.

A secondary classification is according to temperature regulation methods:

(a) Thermostatic control acting on the flue.

(b) Thermostat acting on the gas or oil.

(c) A combination of the two (a) and (b).

(d) A thermostatic device cutting resistance in the electric circuit in or out in electrically heated types and combinations of this will air heat control.

Sometimes the thermostat is actuated by means of a liquid expanding or contracting by rising or falling temperatures. In the case of others some solid such as a metal is used.

CONSUMPTIONS NOT ALTOGETHER CONSISTENT

As far as we are concerned the majority of incubators of the mammoth type which are to be met with where gas can most conveniently be used are of the hot water type. The efficiencies are exceedingly variable and although the hot water types seem to give the best results from a fuel consumption standpoint yet a very great deal seems to depend upon the layout and the construction. For instance 100 eggs with a hot water machine may take about five or ten cubic feet per hour. On the other hand a machine holding 25,000 eggs may consume far more or far less than ten times this consumption. It is therefore not easy to bring our figures down to any definite standard but the above are perhaps fair averages on reasonably good machines.

A new design of mammoth machine has a capacity of some 2,500 eggs and is only five feet square while the usual machine of the same capacity is some twenty feet long. This is an advance as it means less construction cost and less floor space. Above all, however, it means a considerably lower fuel consumption. The losses of heat are practically proportional to the area of wall surface (including top and bottom), and if these can be reduced the gas consumption can be proportionately decreased.

HOW THE TYPES WORK

The older type of incubator usually are only one tray "deep," above which the hot water "coils" are located. These coils radiate their heat down on to the eggs in the trays beneath them and, so to speak, simulate the heat from the hen above. Moreover, as the germ in the egg always comes to the top of the egg, it naturally is supplied with heat and most conveniently. The temperature for hens' eggs is 103 deg. Fahr., and the incubation period is twenty-one days. Some incubators require additional moisture to be added—others do not. At least, the makers say so. The writer, however, finds that almost all the more important hatcheries make a special point in seeing that the humidity is carefully watched. This varies during the incubating period, and also depends on the outside temperature.

The Mammoth Incubator, shown in Fig. 1, differs from other mammoth machines in the arrangement of the egg-trays and in the method used for securing even distribution of heat and uniform ventilation.

As shown in the phantom view of the machine (Fig. 2) the egg-trays are placed one above the other, five deep. This permits the placing of a large number of eggs in comparatively small space.

Obviously, the temperature would differ at each tier of trays if heat were supplied only by means of radiation from hot pipes, or through the use of a current of hot air passing through the egg-chamber in the usual way. This is overcome by the use of electric fans which force the warmed air into every part of the egg-chamber, keeping it all at exactly the same temperature. In fact, this system insures a uniformity of temperature on all egg-trays, which is seldom approximated in any incubator of the single-tray type. *The temperature cannot vary.*

The air is drawn from outside through carefully adjusted openings located around the fans, which are in turn placed at the top of the central heating-chamber. The fans force the air downward through the coils of hot-water pipes, below the lower edges of the central partitions into the incubation chambers, and thence upward through the egg-trays. Carefully adjusted ventilating openings are provided in the top of the case above the egg-trays, and through these a certain portion of the air escapes, to be replaced by fresh air drawn from the room. The air intakes and outlets are so balanced that exactly the required amount of oxygen is delivered to the developing embryos at all stages of incubation.

This system overcomes the difficulty of securing ventilation without excessive evaporation, the common defect of other mammoth incubators. Too rapid evapora-

*For some of the illustrations and the data given here the author is indebted to the Buckeye Incubator Company, of Springfield, Ohio.

tion means small hatches and weak chicks. The three vital factors—heat, ventilation and moisture, should be automatically held in correct balance.

To prevent the air becoming stagnant it must be circulated. (See Fig. 3.) This is clearly demonstrated by the depression we experience on a sultry day and the invigoration that follows when a breeze spring up. It will therefore be clear that through the use of the electric fans not only is an absolute uniformity of temperature maintained, but at the same time, the agitation is continuously tending to keep the air vitalized. There is little opportunity for poisonous gases in the egg-chamber under this system of incubation.

The desired proportion of the air in the egg-chamber is continuously circulated through the machine, the same air slowly changing, without losing any of the moisture which is so vitally necessary to the proper development of the chicks.

The fixed ventilators in the top of the incubator permit just a certain amount of moisture to escape and an equal amount of fresh air to come in, so that we are maintaining the ideal hatching conditions every minute. The conditions are automatically fixed. Under this system of incubation the temperature is equalized with absolute certainty, the moisture is automatically controlled, and the eggs are continuously surrounded by the freshest kind of fresh air.

The temperature is controlled by an all-metal thermostat connected with the heater. This automatic device is sensitive to the slightest change in the temperature of the circulating air and regulates the temperature of the circulating water accordingly. If the temperature of the circulating air shows a tendency to rise or fall a fraction of a degree, the thermostat automatically increases or decreases the supply of heat going through the water-heater.

A Continuous Hatcher

It is interesting to note that contrary to the general type of "non-fan" machines, this incubator is a "continuous hatcher." Single trays may be filled with eggs at any time without disturbing or injuring any other eggs in the egg-chamber, or the entire machine can be "loaded" at one time.

An incubator in which any number of eggs may be introduced at any time has been the greatest need of the modern poultry farm and hatchery. Under the old system all the eggs must be placed in the egg-chamber at the same time, as the necessary "cooling" could not be applied to later lots of eggs while the first lot is hatching.

Under the newer system the eggs require no cooling. The real purpose of the cooling period under the older plan was to give the developing chicks a breathing spell out in the open, a plan necessary to the welfare of the chicks because the eggs are confined in a closed compartment in which the circulation of air is necessarily slow and sluggish. As a result of this slow circulation there will be an accumulation of poisonous gases in the incubator, which necessitates the "airing" of both the eggs and the egg-chamber. This is particularly true where some eggs prove infertile or where the germ dies and is not detected. Many chicks are lost and whole hatches lost due to this cause alone.

The great majority of persons prefer to introduce fresh eggs every few days, so a chick-guard is provided for the four lowest trays. By starting all the new eggs in the top trays and moving the trays down a peg as each hatch is completed, the chicks always hatch in the bottom trays where the metal guard confines them comfortably in the dark when the machine is opened.

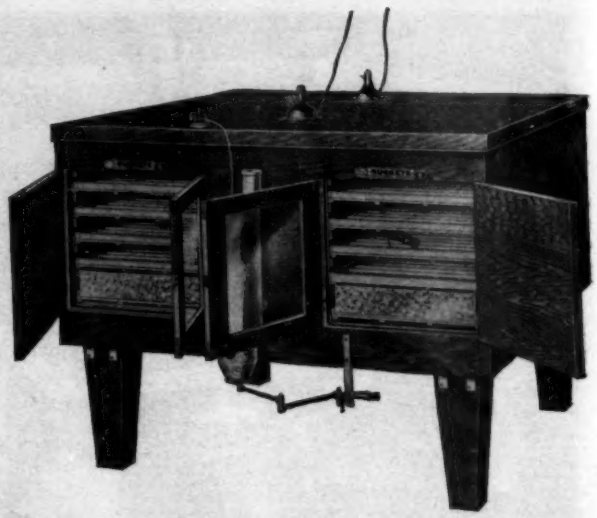

Fig. 3—View of mammoth incubator showing fan controls, thermostatic arrangement and interior formation

Success Which Gas Meets Where Employed

In order to give readers some idea as to the success with which gas has met where it has been employed, the writer addressed letters to the Department of Agriculture in Washington, D. C., and to several of the State authorities.

Mr. Victor G. Aubry, of the State of New Jersey Agricultural Department Station (to whom the writer is much indebted writes as follows:

"There is only one place in Jersey where gas is being used for incubation and brooding and that is in Cumberland County in the vicinity of Vineland and Millville, and here only a few people use it. I am not in a position to give you the cost or any particular data on it except that these men seem to be very much satisfied with the use of it. I do not know how this compares in cost with other methods of heating, but feel very sure that it cannot be high, as I have never heard these people say anything about it. We have one man in Lakewood, in that section, who is using gas for illuminating his poultry house during the long nights and winter, and he seems to be well satisfied with it.

"I understand that in certain sections of New York State, especially up towards Buffalo, that natural gas has been used to quite an extent."

From this and from letters received from the government departments it would appear that great satisfaction has resulted wherever gas has been used. The cost of operation, however, appears to be almost as varied as the number of styles of mammoth incubators employed, but the average is probably not far off what has been given earlier in this article.

Those who evince an especial interest to do so will doubtless wish to consult the authorities mentioned further.

The following letter from the Extension Department,

College of Agriculture, West Virginia University, Morgantown, W. Va., is of further interest and the writer is much indebted to Stuart A. Cody for the data submitted. Readers may also wish to avail themselves of his offer to supply further data which doubtless can be given in answer to any specific questions which are asked.

"We have one Mammoth incubator in this state which is satisfactorily run with gas with a simple arrangement designed and made up by the owners. I will endeavor to get more concrete information regarding this, if you wish, whenever it is convenient.

"We have been very successful at the West Virginia State Farm in using the Arenburg Gas Stove equipped for gas and have produced 1,000 to 1,500 chicks regularly under a single brooder. We have a double hover, which saves a great deal of expense in gas, and causes the heat to go to the edge of the hover on the inside before it can escape up the chimney.

"If you wish further information in regard to our success with gas I shall be pleased to furnish you with it."

As to the best burner to use the writer is desirous of making no specific recommendation except that it should conform to the individual needs of each incubator.

When burners have been provided by the incubator makers as a rule they have been of cheap and decidedly indifferent construction. The old style of iron burner is often met with but its use is very undesirable as imperfect combustion is rather the rule than the exception and this is obviously not to be wished for.

The best burner of all, however, is one having properly designed raised ports. If correctly made and installed the combustion should be very nearly perfect and a high efficiency should result. Such a burner is excellent for use in brooders also.

Of course the small machines can often operate with a simple Bunsen burner, and larger types may at times employ a cyclone burner.

The longer the incubator the greater is their surface and consequently the heat lost, hence the greater must be the burner capacity.

By increasing the number of rows of shelves, however, this factor is greatly reduced and as the "load" (quantity of eggs) only affects the initial period of time required to raise the temperature, to 103 deg. Fahr. it does not figure much in the operating cost.

In conclusion it is hoped that this data will be of use to gas men in securing the business. The field is a very big one and scattered over almost all sections of the country.

Utility Ownership

Carl D. Jackson, chairman of the Wisconsin Railroad Commission, says: "The actual ownership of most public utilities is by the people themselves. The first liens on most public utilities are very often owned by trust companies, banks and largely by insurance companies throughout the United States. Nearly every man carries an insurance policy; the average citizen has a bank account—yet not one citizen out of a hundred realizes that in one form or another his actual savings and insurance, and his wife's and children's welfare, depend upon the solvency and continued operation of public utilities. There is probably not one man in fifty whom we meet on the street who does not own a part of a public utility, whether he knows it or not. So the question relating to public utilities is not confined to the consumers on one side and the public utilities on the other, but the whole question is one involving financially nine-tenths of the entire population. Furthermore, public utilities should not only be solvent in themselves, but there should still remain an incentive to reasonable development along the lines to be demanded by future generations. Nothing should take place in this country to discourage individual and collective efforts along progressive lines."

Never Was a Time When So Fertile a Field Presented Itself for Exploitation of Gas for Domestic Purposes

A. W. Borden Not Only Looks for Bright Future for Gas Industry but Feels that that Future Is Close Upon Us

I believe that for the gas industry the future opens up greater possibilities than any of us have ever seen. It is a safe assertion that there is not a city within the district embraced by the Iowa District Gas Association, but which to-day faces an appalling shortage of dwellings, which represents the cumulative demand of two or more years of comparative inactivity in the building lines. This demand is going to be satisfied within the next few months and the gas industry will be called upon to do its part in the equipment of these homes. There never was a time when so fertile a field presented itself for the exploitation of gas for domestic purposes, declared A. W. Borden in his presidential address at the recent annual convention of the Iowa District Gas Association. This brings us to an extremely vital phase of the situation, as pertaining to our part in the rehabilitation of process.

Means Enlargement of Plants

To adequately care for this increased demand on service means enlargements of our manufacturing plants and extensions to our distribution systems, at prices for machinery, pipe and labor, which, at first glance, appear of staggering proportions.

We will at once begin to calculate the amount of possible yearly revenue to be derived from this new business and attempt to ascertain if it is sufficient, under present cost of operation, to yield an adequate return upon the investment involved. If, upon such a showing, we are unable to go to our bankers and secure without question or delay, and at reasonable rates of interest, the amounts of money required to finance the extensions made necessary by the growing demands of our respective communities, it is then evident that we must look to our rates.

I believe that most of the gas companies in this district have received a certain measure of relief through increased rates, but in some instances of a temporary nature only. In such cases, or, where the rate received for gas produces revenue inadequate to complete fulfillment of that most important mission to its community for which the gas plant was originated, then should no time be lost in straightforwardly placing the problem before the consuming public.

Co-operative Community Spirit

I think it is recognized that one of the results of the

war has been the development of a more closely co-operative community spirit in our cities and towns, and it is my firm belief that, when justified and the petitions for same presented and supported with frankness and clarity, there has never been a time when the subject of increased utility rates would be met with so great a degree of intelligent consideration and the spirit of fairness. It is obvious that it would be impossible to meet the new standards of production cost and investment upon former standards of unit returns.

Various plans calculated to place the combined sale of gas and gas service upon a more equitable compensatory basis have been advanced from time to time. Notably of importance may be mentioned the theory of charging for gas upon a basis of Btuf. value rendered, which must be accepted as founded upon sound commercial hypothesis. By such a method, or otherwise, rates for gas service must be made commensurate to the new plane of costs.

Now that the moment the world has been awaiting has come—the signing the Peace Treaty at Versailles—it is reasonably assumed that with the many complex problems of that greatest of all treaties brought to solution, the commercial world will quickly readjust itself to new standards of business. The signing of the Peace Pact should be the signal for the industrial forces to advance and the gas industry must be prepared to "keep step."

When this convention meets in 1920, I shall fully expect to hear our members discussing, rather casually, the gains in output for their respective plants in terms of 30 per cent and 40 per cent.

Commission Given Power to Change Utility Rates

The ruling of the United States Supreme Court in the Pawhuska gas case to the effect that the Corporation Commission of Oklahoma has jurisdiction to change rates even though made by a franchise reveals a policy the commission has always believed it had consistently. Some difference of opinion has existed at times as to whether or not the commission should have the authority to make a change in a rate for gas or electricity that had been fixed in a franchise which is in reality a contract between the people and the serving company. The matter of public policy entered into the consideration by which the commission was clothed with such power. If there was no way to change a franchise rate, without great difficulty at least, and the service company operating at a great loss, it could do nothing but quit, and there would eventually be no service at all. In giving the commission authority to act it was done so on the principle that the people would rather have some service if it cost more, than none at all.

Government Statistics on Price of Gas

Figures compiled by the Department of Labor show that advances in price of gas for household purposes were general among American cities during the year ending April 15, 1919. Increases varied from 5 per cent to 45 per cent, the latter being the advance in Buffalo, which went from $1 to $1.45. Portland, Ore., showed a decrease from 83 cents to 77.9 cents per 1,000 cu. ft.

General increase also was registered in cost of natural gas and in manufactured and natural gas mixed. In Kansas City the price of natural gas went from 60 cents to 80 cents per 1,000 cu. ft. Advance to consumers of District of Columbia was from 90 cents to 95 cents.

Convinced Stills for Light Oil Recovery Can Be Used in Part as Dehydrators for Crude Tar

Henry Clay Adams Reminds Gas Men of Stable Market There Always Has Been for Water Gas Tar and Tells of Refining Methods Carried on by Des Moines Company

Tar is one of the few by-products of water gas for which there has been a fairly stable market in the past, and inasmuch as the demand for this tar still exists, as is evidenced by the inquiries received concerning it, there is no doubt that the various types of stills erected for the recovery of light oils during the war can be utilized in part as dehydrators for crude tar, declared Henry Clay Adams in a paper delivered at the annual convention of the Iowa District Gas Association.

I give below conditions as represented by actual operation at the Des Moines, Iowa, gas works:

Prior to April, 1917, a continuous open type tar still was in operation run in connection with a 20,000-gal. tank. This quantity of tar was circulated until it contained 2 per cent or less of water; all vapors both of water and light oils, distilling off up to the temperature necessary for the removal of the water from the tar, were carried off in the air. tI required from ½ lb. coal up per gallon of crude tar for refining, the quantity of coal depending of course on the quantity of water contained in the tar.

In April, 1917, an 8,000-gal. tank containing steam coils was placed in operation as a tar still. The water and light oils were driven off in the form of vapor through a worm condenser to a separator from which the light oils were run to a toluol recovery plant for fractionation. The resulting refined tar as a rule would be free of any trace of water.

Less Coal to Refine Light Oil in Closed Stills

Since the cessation of hostilities in the world war the demand for light oils has decreased to such a point that there is practically no market for the light oil recovered —this oil is now returned to the tar before it is shipped. The amount of coal necessary to refine a gallon of tar in a closed still is less than in an open still—this, of course, depends on the amount of water and how far the distillation for the recovery of light oil goes.

I have found the specific gravity of the tar to vary from 1.08 a refined tar from which all benzols, toluols and xylols have been removed to a refined tar of 1.04 to which the same light oils have again been added after removal in the process of dehydration.

The storage of crude tar is quite a problem especially in regard to emulsions and light oils. In the Des Moines situation the tar drawn from the separators flows to a tar well from where it is pumped to the tank of the relief holder; here it has a chance to settle, the emulsion gradually dropping its tar content. However, the lifts churn this tar to quite an extent so that when the tank shows too much tar or emulsion the crude tar is pumped to a tank of an inactive storage holder where it has a chance for further settling. If the quality of the tar

warrants it—it may be pumped directly from the relief holder to the still.

Determining Amount Per Thousand Feet of Gas Made

One of the problems that seems to bother water gas manufacturers is the amount of tar manufactured per thousand cubic feet of gas made. Probably the best way to arrive at this is from the amount of gas oil used. Refined tar recovered from one gallon of gas oil varies between the approximate limits of 0.10 to 0.17 gallon. For the seven years of 1912 to 1918 inclusive 2,873,567 gal. of tar were sold, an average of 410,000 a year. During the same period 19,485,000 gal. of gas oil were used, making an output of 0.147 gal. of tar per gallon of gas oil.

This amount varies with the grade of gas oil and heats carried in the sets. Early last autumn we experienced a great deal of trouble fixing the oil in the carbureter, due to the fact that we had to lower our heats due to the appearance of naphthalene in the distribution system. This was before the war ended when we had to take whatever was given us in the gas oil line. We used quantities of heavy blended oils which produced much tar, light oil and emulsion in our separators. At that time doubtlessly the amount of tar made amounted to about 20 per cent of the gas oil used.

Being Certain of the Amount that Can Be Made

One must be careful when making a contract for disposing of any large quantity of tar to be sure of the approximate amount one can make and the time necessary for the emulsion to settle. Too much stress cannot be placed on proper sampling and testing of tar in storage tanks to determine total quantities of tar in storage corrected for water content.

When making contracts the following points should be observed:

1. Tar should contain not more than 2 per cent of water.

2. Specific gravity range 1.02-1.10.

3. Tar to be sold corrected to 60 deg. Fahr. This last to take care of quantities of hot tar run directly from still to tank car.

In closing, I wish to point out that during the years 1917 and 1918 a quantity of crude toluol (70 per cent C. P. toluol) was recovered from water gas tar equivalent to 1 per cent of the amount of tar—and crude benzol (75 per cent C. P. benzol) to an amount of 5.5 per cent.

TABLE

(Des Moines Gas Company, Des Moines, Iowa)

Year	Refined Tar Sold (gallons)	Gas Oil Used (gallons)
1912	275,068	2,471,711
1913	462,138	2,547,624
1914	332,110	2,694,768
1915	184,928	2,720,160
1916	214,967	2,836,153
1917	1,067,929	3,106,466
1918	336,427	3,108,208
Total	2,873,567	19,485,090

Pressure Mains with Accompanying Equipment and Auxiliaries Reduce Inadequacy and Obsolescence of Distribution Mains to a Negligible Quantity

Sidney C. Singer Describes System Built Twenty-Three Years Ago for City of 100,000 Which Has Managed to Adjust Itself to Increasing Load

With the wide diversity of uses to which manufactured gas is put in both industrial and domestic circles, an unforeseen demand has been placed upon distribution gas main systems.

No longer is initial holder pressure at the gas works sufficient the entire day to carry the distribution load required in the outlying districts of our cities, declared Sidney C. Singer, of the Omaha Gas Company, Omaha, Neb., in a paper presented at the recent annual convention of the Iowa District Gas Association.

Holders as distribution centers, at either the works or even those in outlying districts possess the disadvantage of necessitating prearranged pressure schedules for maximum demand periods. These schedules at their best are guesses and must be changed frequently. In addition, this method of distribution necessitates the great cost of constantly laying large trunk mains and so other methods of reinforcing heavily loaded distribution systems must be developed.

Primarily the most important phase of distribution pressures to both company and consumer alike, is its uniformity during the entire day, and so I will attempt to show in as few words as possible, just what has been done by the gas fraternity along this line.

In the first place, in making plans for any municipal improvements that depend on the number of individuals to be served, such as the installation or extension of gas or water supply or sewer systems, it is necessary to provide for the probable increase in population for years to come. The provision that should be made for future requirements and the number of years in advance for which provision should be made, depends largely upon the nature of the work under consideration. Ordinarily, the increase in cost due to future provision computed at compound interest for the future period should not be greater than the amount required at the end of that time to rebuild the work adequate to the increased needs.

A Concrete Case in Point

I have in mind a concrete case—a typical city having about 100,000 population twenty-three years ago. This city was at that time, and up to 1908, supplied from the gas works' holders and an outlying holder. The gas works is located in the heart of the city, and the outlying holder about a mile south.

Mains, considered large enough years ago, were laid radiating in all directions from the gas works, and smaller low pressure distribution mains acting as tributaries fed the remainder of the district. This method was all right for the time it served, but the density of population increased continually though not uniformly throughout the city—hence a flexible system of giving districts uniform gas pressure had to be devised.

In the particular city mentioned, districts A, B, C, etc., were carefully studied and gradually served with a trans-

mission main system feeding a set of district controls at given reducing stations. These reducing stations were located as near as possible to predetermined centers of distribution. From these stations low pressure trunk mains were laid in various directions. Thus each district had its own source of pressure control within itself, and all parts of its respective district could be supplied with a uniform pressure—the amount of which depending on that for which the district governor was set.

Now in some districts, such as "F" and "J," a more complete change in supply was made to give uniform pressure, so that it will readily be seen the particular gas company in question has constantly kept its uniformity of pressure purpose before it.

In the case of the newly gas developed districts "F" and "J" for the first year or two they were carried as holder or near-by station loads. Later, as in the case of "J" especially, the demands were so heavy, reducing stations were built having district control governors set with low outlet pressure. As the demand increased, house governors were installed and higher pressures carried on the outlet of the district governor.

Working It Out Right Up to the Consumer Meter

So that considering the entire layout—uniform pressures were maintained by a combination of sources—namely, gas works' holder pressure, district governors with outlets set at low pressure, district governors with outlets set for higher or intermediate pressure in conjunction with house governors and higher transmission pressure used to feed these district governors and individual mercury seal house governors in homes located along the line of feed.

Too much stress cannot be laid upon the fact that pressure mains, such as illustrated by the typical city, with its accompanying pusher equipment, reducing stations and other auxiliaries, reduce the inadequacy and obsolescence of distribution mains to a negligible quantity.

The typical city used in conjunction with this paper has practically eliminated the tearing up of pavements for trunk mains—a blessing to both the company and the public—has a flexible load, easily regulated, the public are insured uniform gas pressure, and the company saved the evil effects of complaints from this source.

The accompanying chart for the typical city indicates radial feeds from the pusher at the gas works. Cities such as Rochester and St. Louis, have constructed pressure mains, encircling the city with necessary feeds to the encircling belt.

The details of any of these methods of operation is the subject of a paper by itself, and I shall not but mention two essential auxiliaries to be used in maintaining uniform pressure, namely, the telemetric gauge and the district control loaders of both mercury and Venturi tube type.

The telemetric gauge can be attached to any of the above mentioned systems and will guide the gas works in insuring a sufficient and economical pressure at the place of delivery. On the chart of the typical city, the telemetric gauge is installed at District F., the feeder to that district carrying the heaviest transmission load. The mercury float loader is used on Lloyd district controls and the Venturi tube with Reynolds district controls. The latter is used to great extent along the Hudson River—is simple and has no mechanism to get out of order.

Coke from Small Coal Gas Plants for Domestic Use

C. J. Hauschildt Enumerates Factors that Determine the Practicability of Developing a Domestic Demand for Coke

In order to produce a coke that is suitable for domestic purposes we must use a gas coal that is of such analysis that will give us an average yield of gas, tar and ammonia, and at the same time a coke that is firm in structure and low in ash and sulphur, and the ash of the coke must be of high fusing point, otherwise clinker trouble will surely result, especially if used in small furnaces, which would necessitate forcing the coke firm, due to the fact that coke is much lighter than coal, declared C. J. Hauschildt, inspecting engineer of the United Light & Railways Company, of Davenport, Iowa, in a paper presented before the annual convention of the Iowa District Gas Association.

After having decided upon the kind of coal to use, it becomes necessary to have such conditions prevail during the carbonizing period as to thoroughly carbonize the coal. A long carbonizing period, as a rule, produces a coke that is more firm in structure than will a short carbonizing period; however, care should be taken not to carbonize the coal for too long a period and with too high heats, as this will tend to create naphthalene troubles throughout the plant.

Quenching a Most Important Consideration

The next step, the quenching of the coke, is one of the most important things to consider. As soon as the coke is drawn from the retort combustion begins, and just enough water should be used to properly quench the coke. Coke when hot will absorb 50 per cent of its weight of water if given the opportunity, and if such coke is put into a pile it will never dry out. Dry coke when cold will absorb practically no moisture, and when in a pile will be penetrated only a foot or so by even a hard rain. This water will remain almost entirely on the surface of the pieces, and two or three days of good sunshine will evaporate nearly all of it. A coke that has been drenched instead of quenched is not acceptable to the user, for the reason that the sponge characteristic makes it tenacious of water, and if dry coke is to be marketed it must be made so at the time of quenching. If coke is produced and quenched in the above-described manner we will have a product that is firm in structure and having a good luster.

In preparing the coke for the consumer it should be borne in mind that the less the coke is handled from the time it is drawn from the retorts until it is sold to the consumer the better. The coke can be stored in the open or in sheds. The coke should not be dropped from any great height, as it breaks easily and the consequent accumulation of breeze is heavy. The pile should be so arranged that after the first start of the pile is made the fresh coke is dumped upon the other coke and allowed to roll to the ground.

(*Continued on page* 10.)

American Gas Engineering Journal

SIXTY-FIRST YEAR

Published Weekly by AMERICAN GAS LIGHT JOURNAL, INC., 150 Nassau Street, New York, N. Y.

Elbert P. Callender, Pres. S. G. Krake, Vice-Pres. Frederick A. Southworth, Sec'y-Treas.

Eugene C. Miles, Editor

Subscription $3.00 per year, in cluding postage in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $500—Single Copies, 10 cents

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As the Journal Views It

No Dearth of High Caliber Men—They've Simply Not Been Located

Every now and then some manager looking about for a specialist in a particular line deplores the apparent dearth of high-caliber men in the gas industry.

We, ourselves, never believed such a dearth existed. Gas manufacture and distribution in the aggregate is a vast institution and highly technical in many of its demands. It is carried on with a degree of efficiency and economy that compares well with standards maintained in other industries. It has not seemed reasonable to suppose that this could be accomplished by mere truck horses.

Yet, when asked to suggest where this or that specialist might be obtained, we have been, too often, so to say, "stumped"; apparently bearing out thereby our disgruntled manager's contention.

Since it adopted, some years ago, its policy of going out into the field, into the small places as well as into the big places, seeking out installations, devisements, and incidents that had in them something that would suggest something of value to other gas men, then going after the individual who should be able to give a complete and intelligent description for the article, whether that individual had ever before written anything for publication or not, the American Gas Engineering Journal has made several interesting discoveries.

It has been amazed more than once at the technical depth of men it had never even heard of before, at the wealth of constructive and practical originality contained within others. It has wondered as to how many similarly happily equipped are buried elsewhere in the gas field for, of necessity, all of its adventures out into the great

field of actual work have been but incidental touching here and there in spots, but never really covering.

This, then, is the solution for the manager who more than once has searched vainly for the specialist for a particular job: Devise some means by which a man's quality may be generally known, not alone within the narrow limits of his own organization, but throughout the whole field.

In this effort the man himself should assist. It may be the company he is working with is just and appreciative to an unusual degree. Even then he will not lose by having others know of the ability, the education and the fitness for particular work he may possess. Even one's own company appreciates and rewards one better if it realizes there are others who would be glad to pay even more to get him. This is but natural and human.

The individual, as a gas man, is limited in his means of making his worth known. He cannot buy a page of advertising space and shout loudly his high value. People would not believe him if he did. He must demonstrate his worth to have it accepted at its true value.

Two means are readily open for him to accomplish this. He may convince a limited number by actually working under their view. And he can convince an unlimited number by writing.

If he has knowledge of how to increase economy in gas manufacture let him write an article setting it forth. There will be found no difficulty in getting that article before public notice. Gas journals spend considerable time and money searching out the field for just such articles. If his knowledge is sound knowledge, if the article reveals valuable brains in manufacturing, he will not have to tell people it does. They will know, and the writer will be known—and a marked man.

So also should the American Gas Association prove a valuable agency in bringing able men out of obscurity and into the limelight.

There is no dearth of high caliber men in the gas industry; there has been, however, an especial inefficiency in bringing them to the public eye.

We're Missing Half the Fun

Were we not so engrossed in our vexations, our desperation, at the seeming perversity of those who tell us we may or may not increase our rates, we could have been indulging in a wealth of philosophical reasoning apropos the inconsistency of man.

A traction company has given out figures showing wherein, in 1916, it paid somewhat under two million dollars for its coal, this year it pays somewhat under four million dollars for the same quantity—the extent of increase has been 84 per cent, to be exact. It was then carrying passengers a certain maximum mileage for a flat five-cent fare. To-day it is carrying them an increased maximum mileage for the same rate of fare.

It has asked for an increased rate, but hasn't gotten it. It doubtless will keep on asking, and, in our private opinion, will not get it, for the reason that there exists a fool notion—we suspect even in the minds of the power that regulates those rates—that this traction company is in some miraculous manner piling away profits on rates they had three years ago and under the cost conditions that exist to-day.

On the face of it how can the human mind be so obtuse? To a considerable extent the same people who are regulating rates to-day were regulating them three years ago.

Presumably, then, they were holding down rates to a reasonable return. How, then, can they reason that with the rates unchanged and costs so vastly multiplied that there can be any return at all?

It would seem on the very face of it that the application for a rate increase on the part of any utility should have been merely the most mechanical type of formality. Yet we remember no increase granted that was not contested in some degree or other, and in some cases most bitterly.

Coke for Small Coal Gas Plants for Domestic Use

(*Continued from page* 8.)

Grading to Sizes

The coke should be graded to various sizes suitable to existing demand; as a rule, lump coke and crushed or nut coke are the ones most commonly sold. Lump coke is used in furnaces or boilers that are equipped with large enough fire boxes, and the crushed or nut coke for furnaces that were built for hard coal. The lump coke is merely forked into wagons or trucks. The crushed or nut coke can be made by either crushing or screening the run of retort coke over screens having the required mesh. Care should also be taken to deliver a uniform quality and size at all times.

In creating a demand for coke to be used for domestic purposes it becomes necessary to thoroughly acquaint the public with its value compared with hard or soft coal, also to instruct them in the use of the coke.

Coke should be advertised as all successful commodities are. All trucks and wagons should be placarded with the sign "Genuine Gas Coke" or some such "trade name." Newspapers are one of the best forms of publicity. The advertisements should cover the advantages gained by using coke as a fuel and instructions of how to use coke to get the best results.

The new-business department, by the use of representatives who not only sell but demonstrate until the consumer is thoroughly taught in the use of coke, is the most effective of all.

It has also been found very satisfactory to cooperate with local dealers for them to handle the entire output of the gas works.

A Different Attitude Towards Sales Forces Would Mean Millions of Dollars Saved to the Utilities

Why the Life Insurance Business Does Not Lend Itself to Government Operation—Basis for the Itching Heel Tendency of the Average Public Utility Salesman

By J. E. BULLARD

There is one business in the United States which, like the gas business, has been for many years constantly threatened by Government ownership. In fact many attempts at Government ownership and operation have been made but none of these have proved successful. In fact, each and every attempt has resulted in an admitted failure. This business is life insurance, and insurance experts point out that the Government failures have been due directly to the fact that the Government does not employ salesmen to the extent as that privately operated companies do.

In the life insurance business there have never been the near-successes that have sometimes resulted from municipally owned and operated gas companies.

There is no business in the world in which greater importance is given the sales force than in the life insurance business. It is in the sales end where the largest salaries are earned. It is in the sales end where we find the greatest men in the business. New officials who cannot show a record for selling insurance have a great deal of difficulty in winning the confidence of the people and of the employees of the company. In the life insurance business the sales force is king.

An Excellent Argument for Two Things

Government experience in life insurance serves as excellent arguments for two things. First it shows the inability of the Government to make a real success of public or semi-public utilities, and second, it is one of the strongest arguments for a strong and efficient sales force that can be found. It will prove both interesting and instructive to follow the record of one life insurance undertaking of a State.

This is the State of Wisconsin attempt, which commenced business in 1912.

This is what W. E. Underwood, an insurance expert and the editor of one of the leading insurance papers, has to say in regard to it in an article in the Mar. 29 issue of the *Independent*.

"In 1912, the first year of its existence, the Wisconsin fund issued 239 policies for $147,500; in 1914, 83 policies for $82,800. In 1915 there was a small decline under 1914, and in 1916 a slight gain; but in 1917 the new business amounted to little more than 20 per cent of that of 1916. During 1918 only eleven policies for small amounts were issued. At the close of 1918 there were 461 policies in force, aggregating in outstanding insurance $379,700, and these figures represent seven full years' results. The total assets were $55,676. The death rate in 1918 was 40 per cent in excess of the expected.

An Argument for Competent Sales Forces

"The experience acquired in this venture into Government life insurance should be worth something to people who are not committed to the doctrine that certain public and semi-public utilities should be operated by the State. Here we have conclusive evidence on a seven years' trial of the matter, that the much berated 'acquisition cost' is impossible of elimination and that the amount it represents can be kept in the pockets of the policy-holders."

What better argument than this could we find against Government ownership and operation and in favor of efficient sales forces. This expert makes it very plain that the principal cause of failure on the part of the Government was a lack of an efficient sales force. If efficient sales forces are so effective in the life insurance business we can fairly assume that in the gas business, another industry that is sometimes threatened by Government ownership, they will also prove effective. If sales forces are not vital to the success of the undertaking it would be better and more economical to dispense with them altogether and not waste the money of the stockholders. If they are vital to permanent success, especially in an industry threatened periodically with Government ownership, then these forces should be made permanent in nature and just as effective as it is possible to make them.

One of the most expensive phases of any sales force in any industry is the labor turnover. In most lines the turnover of labor on the sales force is as great and in many cases greater than in any other department. This results in very materially cutting down the effectiveness and the efficiency of these sales departments.

Traceable to Two Causes

This labor turnover can be traced to two causes. The most apparent one is the unrest of the salesmen. There seems to be a tradition among a certain class of salesmen that the best man will go stale if he remains in the same district or sells the same product for too long a time. It is a theory with these men that frequent changes are needed to keep up interest, energy and enthusiasm. The second cause, and this has brought about the first one to a much greater degree than is generally admitted, is the attitude that so many business institutions take in regard to the sales force.

The sales force is considered an overhead that can only be carried during prosperous times. At bottom the men at the heads of these concerns look upon the sales force as a luxury rather than a necessity. It is not considered a vital part of the business, and is dispensed with either in part or as a whole as soon as a business depression hovers in the distance.

Included in this class are the majority of gas and electric light companies. No sooner had the Great War broken loose upon the world in 1914 than gas and electric companies began to cut down or discontinue their sales forces. The electric light companies seemed to go about it in a more thorough manner than the gas companies. Many electric light companies appeared to be set on destroying the sales organization in true German style without leaving a trace.

In 1916 I ran across an old friend in New York. He was salesman for a large electrical manufacturing company which itself operates many lighting companies, and, as it sold goods to practically every central station in the country, was in close touch with the sales forces of all electric light companies. In fact, many a salesman for a central station has secured his position through information furnished by the salesmen of this company.

While talking over the attitude of central stations towards sales forces he called attention to a file containing letters asking for information in regard to positions and letters asking for information in regard to salesmen. This file gave the true condition of affairs.

Though a year or two before there had been fully as many inquiries for men as there had been for positions, at that time there were more than two full file drawers full of applications for positions and only a few letters in another file draw showing positions vacant. In other words, there were hundreds of men, and some of them very high-grade salesmen, who were looking for positions and only a very few companies who were looking for salesmen.

Some Consolation for the Gas-Company Salesman

It is unnecessary here to deal with the tendency towards socialism, unrest and Bolshevism which results from such a policy. We will deal simply with what it costs the individual companies.

The conditions in the electric field have been cited because they are a little worse than they are in the gas field. They have also been cited because it is common practice to hold up to the gas man the virtues of the electric man. In fact there have been times when this has been done to such a degree that an ambition has been planted in more than one gas man to become an electric man when it would have been far more profitable and satisfactory for him to have continued right along in the gas industry and made himself a better gas man.

Everyone knows that the condition of new business departments in the gas business are bad enough, but there is a little consolation in the fact that they are probably worse to-day in the electric-lighting industry.

What do these constant changes mean in dollars and cents?

First they mean that sales forces are not composed of veteran salesmen.

For the most part they are composed of men who are being trained.

It costs money to train these men.

The first few months they are not likely to produce enough to pay for their cost.

It may require two years to get them upon a really profitable producing basis.

This is expensive in both time and money.

No sooner are they in a position to make themselves a real asset to the company than along comes an industrial depression, the officials of the company become more or less panic-stricken and these salesmen into whose training has gone so much of the money of the gas company are discharged.

Perhaps instead of a panic breaking loose there is a period of unprecedented prosperity and the gas company finds itself in an oversold condition. Under these conditions a sales department is not needed and it is promptly disbanded.

Since business depressions and periods of great prosperity follow each other in fairly regular cycles there is considerable regularity in disbanding and organizing sales forces, these forces becoming largest and most active in those periods between either extreme.

If this operation were confined to a few companies it would not be serious.

As it is rather universal with all public utility companies selling gas or electric service to the consumers very much of the effectiveness of the sales forces is lost.

It is lost because of necessity the sales forces are composed to a very great extent of green men, men who have had little or no experience in public utility salesmanship.

In fact they are composed of men who have not reached the period of the greatest productiveness.

Now We Want Them Again

To-day both gas and electric forces are entering upon a period where sales forces are needed once again, upon a period when they are being organized once again.

Where are the old men, the experienced salesmen who were discharged at the beginning of the war or soon after the United States declared war?

Some of these men are still available.

Many, in fact it is safe to say that most of the very best salesmen, have found that they can find more remunerative and more permanent work in other fields.

They have found that the training and the experience they have secured in the public utility field can be applied to other work and they are lost permanently to the companies who trained them.

The result is that gas companies must now start in training up a new lot of salesmen. They must spend so much money in this process that it would have been cheaper to have carried the old salesmen over the period that it appeared that no salesmen were needed, even though nothing could have been found for them to do and to have had the services

of these veteran salesmen now, the men in which so much time and money had been invested, than to be forced to spend the time and money that will be required to train new men to fill the places of those better men who have been lost to the industry permanently.

Labor turnover is expensive in any department of a business. It is doubly expensive in the sales department.

Most of the other departments are dealing with inanimate things, the conditions under which the men and women work are such that they can be placed alongside experienced employees who can constantly coach them until they become proficient. Even in these departments, however, labor turnover is expensive.

It is estimated that the cost of increasing the wages at the Ford factory in Detroit to the famous $5.00 a day minimum was more than offset by the reduction in the labor turnover that resulted. This gives some indication of the high cost of rapid hiring and firing.

Quick Hiring and Faster Firing

In the sales department this policy of quick hiring and faster firing proves more expensive than in other departments because of the fact that in this department it is more difficult and more expensive to give the careful and constant coaching that is possible in other departments.

The men of necessity have to rely upon their own resources to a very great extent.

For the greater part of the day they are away from the office and are forced to make quick decisions.

If they are unfamiliar with the business or the policy of the company these decisions at the best are sure to result in many cases of dissatisfaction on the part of the consumers which go a long way to counteract the good work that the men are able to do.

It is very difficult to measure with any degree of accuracy the average cost of new salesmen. It is the difference between the good-will that could be built up by old-experienced salesmen and that which is built up by new inexperienced men as well as the actual amount of sales made that determine this cost.

Although there is not at present any way of arriving at accurate figures, sales experience indicates that the new salesmen are more of a liability during the first year or two than they are an asset.

In spite of this fact there are companies which organize new sales forces every spring, carry them through the summer and disband them in the fall. Others merely reduce their forces in the fall and still others keep them intact until a period of depression or of great prosperity arrives. The result is a constant shifting of salesmen and the loss of most of the best ones to other industries before their services have reached the greatest value to the gas industry.

What It Costs

The hiring and training of a new man in a concern has been estimated at anywhere from $25 to several hundred dollars. The lower figures apply to men who are experienced men in the industry but simply go from one concern to another. The higher figures apply to those men who are inexperienced in the industry and have to be trained.

In the sales forces in the gas industry a very large proportion of the new men are inexperienced and have to be trained. If they are experienced men they are often not the most successful men.

They are those who have lacked the ambition or the ability to better themselves in some other industry during the period when there was a general laying off of men in gas company sales departments. The cost of adding new men to the sales force of a gas company, therefore, is very high.

As has already been stated, it is the sales forces of the life insurance companies that have proven such a perfect protection against Government ownership and operation. If these sales forces had been less effective, if they had been periodically disbanded and reorganized, there would not be the great difference shown between Government operation and private operation. Neither would there be the high-grade salesman in the industry that we find to-day. Many of the officers of the great insurance companies are men who have worked up from the ranks of the salesmen. This could not have happened if there had been the same sort of turnover in the insurance business that has taken place in the public utility business.

Where the Insurance Industry Shows to Greater Advantage than the Utilities

It is surely worth while studying the methods of an industry that has been so overwhelmingly successful in defeating every move toward Government ownership and operation as has the life insurance industry.

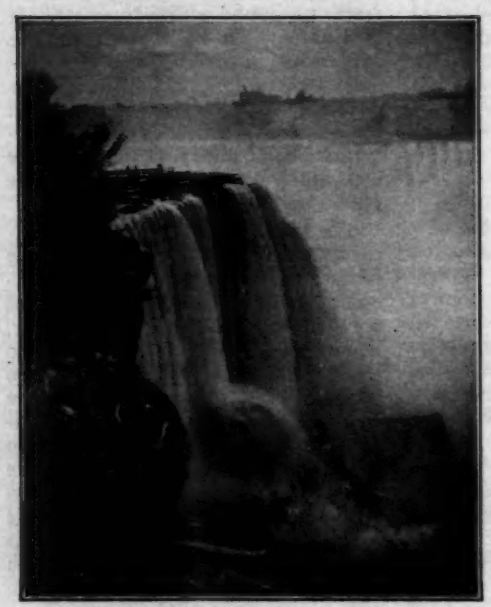
It will be argued that the life insurance business is entirely different from the public utility business. It is different. It has been far more successful in overcoming Government ownership. This difference has consisted to a very great degree in the respective attitudes that life insurance companies and public utility companies have taken towards the public and towards sales forces.

The price that public utility companies have paid for the excessive labor turnover in the sales department has been an unduly high cost for selling, a good-will far, very far, below that which it is possible to build up, and a failure to develop selling organizations which compare favorably with those of other business institutions representing no greater investments and which have not had as long a business history. In some cases the standing of the sales forces is deplorable. This is not due to the salesmen as much as to the policy of labor turnover.

I have talked with book agents who have had public utility sales experience and who considered selling books a more congenial, a more remunerative and a higher-grade occupation than selling for a public utility. The chief reason advanced by these men was that their work was more permanent than working for gas or electric companies.

This is part of the price that public utility companies are paying for the frequent changes they make in their new business policies. A permanent policy of building up sales forces where no men are discharged at any time except for dishonesty or incompetency, where promotions are made from the new-business department, and where everything is done to encourage the men and make them better salesmen would mean millions of dollars to the industry. Let anyone who doubts this statement study the growth of capitalization and revenue, the market record of the securities and the good-will enjoyed by those few companies which for the past twenty years have followed this policy.

NEWS OF THE GAS INDUSTRY



THE FALLS FROM THE CLIFTON HOUSE, CONVENTION HEADQUARTERS

Canadian Gas Association Will Meet at Niagara Falls

Invitation to Attend Extended to American Friends

The Canadian Gas Association is noted for holding conventions at popular resorts, and we feel sure the twelfth annual meeting, which will be held at Niagara Falls on August 21 and 22 will be no less successful than that of former years, and from all indications to date, there promises to be a record attendance. The headquarters will be at the old renowned Clifton House, and the party are expected to arrive on Wednesday, August 20th, ready for the sessions next day. An excellent boat trip has been arranged for which will take most of the delegates who live east, north or west of Toronto, and those who can conveniently arrange to come to Toronto. This boat will leave at 2.00 p. m., August 20, and after a delightful sale of 2½ hours over Lake Ontario, will arrive at Queenston where the party will entrain on the radial line which will follow the Niagara River to the Falls and the Clifton House. The boat party will return leaving Niagara Falls Saturday, August 23, arriving in Toronto in time for the opening of the famous Canadian National Exhibition. The return trip via boat and radial is only $3.10 and it is expected that a large number will take advantage of this excellent feature.

A number of excellent papers are being prepared for this convention and the program also provides for a trip of inspection to the great electric power development plants, and this alone will be well worth attending the convention.

The hotel arrangements are excellent and reservations are to be made through the secretary-treasurer. The following rates are in force: $2 per day per person for room without bath; $4 per day two persons for room without bath (double rooms exceptionally large); room with bath for one person, from $4 per day upward; room with bath for two persons, from $6 per day upward; two rooms with intervening bath when occupied by two persons, from $6; two rooms with intervening bath when occupied by 3 persons, from $8; two rooms with intervening bath when occupied by four persons, from $10.

All reservations for hotel and boat trip are to be made through the secretary, G. W. Allen, 19 Toronto Street, Toronto, Canada.

An invitation is extended to the Association's American friends to take part at this convention, and to let the secretary know of their intentions before August 1.

Wisconsin Company Awarded Citation by United States Army and Navy Departments

The Employees' Mutual Benefit Association of the Wisconsin Gas & Electric Company, has been awarded a citation by the War and Navy departments, permitting it to display on its service flag a shield indicating that it is taking back into its employ all men who left it to enter government service during the war. The company had 65 men in service and their positions were held open for them, or new places provided. The E. M. B. A. cared for these soldiers' families wherever it was necessary. The result has been that when men returned from the nation's service they went right back to their places as simply and naturally as if they had been having a few days' vacation. All of their longevity and seniority rights were not only protected but continued while they were away so they returned with the rights gained by the elapsed time. In short they continued to be employees of the company, members of the company family, as they express it, they being merely loaned to the government for the war. The citation issued by the governmnent to the E. M. B. A. is in recognition of the patriotism of those employers who have reserved places for their men who entered the service.

Strike of Distribution Department at Providence Remains the Same

Charles H. Manchester, president of the Providence Gas Company, of Providence, R. I., has made the following statement regarding the strike of the men in the distribution department:

"The situation remains about the same, except that the men who have quit work have been rather more active in their demonstrations toward the drivers of coke teams. The com-

pany continues to deliver coke to bakeries and other contract customers who depend upon this fuel." When asked if the men had made demands for shorter hours or increased pay, Mr. Manchester said no such question was involved. "The men complained of the kits which they were asked to carry, but from the first have been frank to state that their kick was that such methods would result in lessening the number of men needed by the company. In other words," said Mr. Manchester, "the real question at issue is whether we shall adopt modern methods followed by up-to-date concerns generally, or whether we shall conduct our business in the old-fashioned way, regardless of expense. We are doing all in our power to lower the cost of gas and we shall adopt every modern method which helps to bring this about. A new foreman of the distribution department of the Providence Gas Company is to be appointed and only those of the old employees, now on a strike, will be employed, who are considered efficient and are willing loyally to serve the interests of the company."

Escanaba, Mich., Municipal Plant Shows $13,417 Deficit for Year

Escanaba's municipal gas plant for the fiscal year ending March 1, 1919, saw a deficit of $13,417.73, a report by Manager L. D. Goddard, based on the findings of the auditor and presented to the board of public works, shows. This is exclusive of the $3,432.95 which is charged by the auditor for depreciation, bringing the total deficit to $16,850 or $13.50 per customer. Every 1,000 cu. ft. of gas sold by the city for $1.12½ cost $1.86½ to manufacture, making an actual loss per 1,000 ft. of $0.74.

Wichita Company's Net Revenue $702,329.42

Gross revenues of the Wichita Natural Gas Company for last year amounted to $3,716,461.67, according to a report filed with the State Public Utilities Commission. Net revenues of the company from gas operations amounted to $702,329.42. According to the report of the company, a total of 32,947 patrons were served with natural gas during the year. A total of 21,561,319,000 cu. ft. of gas was sold. Total liabilities of the company are given at $8,755,856.34.

French Magazine Wants Catalogues of Companies in Gas Industry

The *Le Mois Scientifique et Industriel* magazine published by a firm of the same name at 8 rue Nouvelle. Paris, France, sends a request to all companies in the gas industry to send their catalogues to them to be listed in their magazine. The *Le Mois Scientifique et Industriel* is an international documentary magazine, covering a review of technical reviews published all over the world, forming a connecting link between the engineering minds of all countries.

The magazine is the only one of its kind in France and is edited and published monthly by "L'Institut Scientifique et Industriel," a reasearch and documentation organism; it covers:

Part 1—Mechanical, Electrical and Civil Engineering;

Part 2—Mining and Metallurgical Engineering;

Part 3—Chemistry and Electro-Chemisty.

Its staff of collaborators and correspondents comprises over 350 specialists who, each group for its own specialty, read regularly over 150 magazines and reviews, numberless books, catalogues, pamphlets, etc. Careful analyses are made of all articles, interesting French engineers, these extracts being written in a concise, clear manner and abundantly illustrated, thereby enabling readers to tell, at a glance, whether an article is of interest to them or not. Every article indicates the source of information, also the price for which the original article can be obtained. Each number of the review contains: Over 100 pages of closely written text; a very complete index (and at the end of each year, a general index of the year is issued). The magazine also gives a list of new books, with, if necessary, a concise analysis of them; new patents; alphabetical list of manufacturers and new catalogues and trade literature, etc.

Earnings of U. G. & E. subsidiaries for twelve months ended April 30, 1919 (excluding subsidiary companies showing a deficit), show balance after deductions for replacements, etc., of $734,750. Other income amounted to $143,000, making total income $877,760. After deductions for interest on United Gas & Electric bonded indebtedness, the balance applicable to U. G. & E. is $126,207.

C. J. R. Humphreys, Vice-President of Lawrence Gas Company, Dies

C. J. R. Humphreys, vice-president and agent of the Lawrence Gas Company for the last 35 years died at the Massachusetts General Hospital, after an illness of nearly four months. He had been suffering ill health for some time before that but did not give up activities until fourteen weeks ago. Mr. Humphreys was born in England, and his first home in this country was in Boston. He later went to Bayonne, N. J., and it was from that city that he came to Lawrence to live in 1848. He has been connected with the Lawrence Gas Company since that time. Mr. Humphreys belonged to a number of organizations: The New England Gas Guild, American Gas Association, Society of Gas Lighting, N. Y. and the National Electric Light Association.

The funeral was held Friday afternoon, June 27, at Christ church, Andover, Mass.

"We Must Educate the Public to a Realization that It Is Impossible to Get Returns Out of the Utility Business When Rates Are Too Low and Costs Too High"

"There Is No Justification for Employment of Capital Without a Fair Return"—Samuel Insull at Peo-Peoples Hearing

That the only solution for the public utilities problem lies either in the commission form of regulation or else in governmental ownership, was the declaration of Samuel Insull, chairman of the Peoples Gas Light & Coke Company of Chicago. Speaking before the United States Independent Telephone Association, June 25, Mr. Insull made a plea for a better understanding between public utility corporations and the people they serve, and for fair play on both sides. Fully $1,000,000,000 has been invested in local privately owned utilities in Illinois, said Mr. Insull, and more than 75,000 employees are on their rolls. "These local public utilities," he said, "and I am referring to the privately owned utilities, both as to investment and revenue, have a gross revenue of upward of $210,000,000 a year, and they spend annually in new construction somewhere between $67,000,000 and $72,-

000,000 a year. Assuming the figures to be as I have stated, you should appreciate how important it is, not alone to you and to me, to our stockholders, officials and our other employees, but also to every citizen of the State, that the credit of these institutions should be maintained and that they should be so protected that a fair return on the capital invested should be made and the necessary credit be secured to enable them to raise the enormous sums of money needed for the extension of their systems." Commenting on the vast increase in the costs of commodities and labor since the war, and the reduction of the purchasing power of the dollar, Mr. Insull said: "That situation has gone on, and the operating expenses of all our public utilities have been affected by the world-wide movement. In almost every State rates for service have not responded in anything like proportion to the increase in operating expense." Mr. Insull also said that his recent experience under cross-examination before the public untilities commission of Illinois had led him to think very seriously on the subject of the relations of utilities to governmental control of one kind and another. "It occurred to me that one of the drawbacks to the commission form of regulation, and I suppose it to be so with any form of governmental regulation, probably will be that it will check iniative, and will make the utility manager hesitate to try experiments.

"Whatever may be the difficulties of commission rule and regulation, it is infinitely to be preferred to the conditions under which those of us who have been in the business a great many years used to have to operate. The only alternative to-day, if commission rule should prove to be a failure, is, in my judgment, governmental ownership, either municipal, State or Federal, not only of the great interstate utilities and municipal utilities, but of intrastate utilities. The politician always likes to give something to the people. The politician must be educated so he will realize that we who are in the public utility business, and our fellow employees and security holders, are just as much a portion of the people of the State, or the nation, as any other class of people, and that there is no reason why we should be deprived of our constitutional rights, that is, be deprived of our property without due process of law, than there is that any other property should be sacrificed without due process of law. "You must bear in mind," said Mr. Insull in conclusion, "that we are to educate the public to a realization of the fact that it is no more possible to get blood out of a stone than it is to get returns out of the public utility business when the rates are too low and the costs are too high. The only possible way we can reach the public is by impressing them with the fact that the matter is one of common honesty of the community, and that there is absolutely no justification for the employment of capital, on a conservative basis of expenditure, without a fair return in the public utility lines, than there is for its employment without a fair return in any other industrial enterprise in this country."

Leaking Gas from 150,000 Ft. Tank Causes Dangerous Explosion

An explosion at the gas works at Westfield, Mass., followed by a fire, caused considerable damage and several men narrowly escaped losing their lives. An alarm from the private call of the works summoned the fire department, and it was three-quarters of an hour later before the fire was out. Leaking gas from a tank of 150,000 cu. ft. capacity caused the explosion, which was felt more than half a mile distant. The door to the valve house was blown out, the roof of the building was lifted, and another building in the rear was completely demolished. Employees who had been working in a pit just outside had left only a short time before to go to dinner, but A. W. Kenlon had his face and throat cut by flying glass. He was standing by a window opposite the tank and the force of the explosion threw him a distance of 12 ft. The flames shot high in the air and by th time the fire was extinguished 100,000 cu. ft. of gas had been burned. The service to consumers was not interfered with to any appreciable extent, as there were 200,000 cu. ft. available for use in another tank.

Dayton Company Will Refund $25,000 to Patrons

Patrons of the Dayton (Ohio) Gas Company are entitled to a 20 per cent refunder on gas bills paid in the winter of 1918-19, when the pressure was below four pounds to the square inch, as required by city ordinance, was decided by Judge E. Snedecker, Common Pleas court. The amount will reach $25,000.

Buffalo Company Granted a Stay Pending 35-Cent Rate Decision

The Iroquois Natural Gas Company of Buffalo, N. Y., has obtained from Justice Rudd in Special Term at Albany a stay in the decision of the Public Service Commission, recently handed down instructing the gas company to reduce its rates from 35 cents to 30 cents per 1,000 cu. ft. Owing to the granting of the stay, the company will send out its monthly bills on the 15th, bills which usually go out on the 10th of each month. The bills were at the 35-cent rate with a five-cent rebate slip attached. If the low rate is sustained by the courts the rebate slips will be cashed when the decision is handed down. Daniel J. Kenefick, counsel of the gas company, stated that the time for payment without losing discount or the payment of a penalty will be extended

Earnings of Laclede Company Will Increase Under New Rates

Earnings of the Laclede Gas Company of St. Louis will be increased approximately $562,000 per year by a rate increase just awarded by the Public Service Commission of Missouri. The boost ranges from 5 to 10 cents per 1,000 cu. ft. of gas, according to class of service. It is estimated that net earnings should approximate $2,600,000 this year, including the increase, as compared with interest charge of $1,620,000.

The Laclede Gas Light Company has been granted by the Public Service Commission of Missouri permission to increase rates on a schedule substantially as follows: Customers who were paying 75 cents per thousand cubic feet of gas will pay under the new rates 85 cents; those formerly paying 55 cents will pay 60 cents; those formerly paying 45 cents will pay 50 cents. This new schedule of rates will be allowable for a period of thirteen months and it is understood will go into effect July 1, 1919.

The Columbia Gas & Electric total net earnings for the month of May amounted to $608,823.34, or an increase of $2,472.48 over the previous May. The net earnings for the five months ending May 31 amounted to $3,554,166, an increase of $64,181 over the same months a year ago. The surplus for the five months ending May 31 totaled $1,687,449.28.

Central States Company Granted Bond Issue for Improvements

Permission has been granted by the Public Service Commission of Indiana the Central States Gas Company to issue and sell bonds to the amount of $200,000 for the purpose of paying excess costs of additions and extensions, and current additions and extensions to the petitioners' plant in this city. The commission ruled that after being well advised in the premises, is of the opinion that the notes sought by the petitioners are reasonably necessary and that authority for their issuance and sale should be granted. Permission is granted the Central States Gas Company to issue and sell $200,000 par value of its 7 per cent promissory notes, due two years after date at not less than par.

Testimony on Profits of Albany Company

Testimony purporting to show by the company's own books that since 1909 the net profits of the Municipal Gas Company on the manufacture and distribution of gas in its territory ranges from 38 cents per 1,000 cu. ft. in 1910, to a quarter of a cent in 1918, was embodied in a table computed by experts of the public service commission under the direction of Milo R. Maltbie, public utility consultant, and offered in evidence before Justice Nichols at the trial of the suit begun by the city of Albany, the state and the public service commission to compel the company to abide by the so-called dollar gas law. The figures of the experts were presented by David Egert, an accountant of the public service commission. The table purports to show that in 1909 the company received a net profit of 33 cents for every dollar's worth of gas it sold, and that in 1910 the net profit was 38 cents; in 1911, 30 cents; in 1912, 36 cents; in 1913, 31 cents; in 1914, 27 cents; in 1915, 33 cents; in 1916, 34 cents; in 1917, 21 cents, and that while the cost of production in 1918 was $1.0196 the receipts for that year averaged $1.022 per 1,000 cu. ft. Frank T. Mylott, an accountant, who also worked under Mr. Maltbie's direction, gave testimony to the effect that from 1907 to Feb. 1, 1919, the company paid in dividends a total sum of $6,015,000 or $15,000 more than the par value of its present stock, which is $6,000,000.

Grand Ledge, Mich., May Lose Its Gas Plant

Although gas users in Grand Ledge, Mich., are charged $2 per 1,000 cu. ft. for gas the city is threatened with the loss of its gas plant. This condition of affairs has doubtless been brought about by the fact that Grand Ledge being probably the smallest city in the United States to have gas, the field of operations is necessarily very limited. Joseph Marshall of Mulliken, the largest holder of second mortgage bonds against the Grand Ledge Gas Company, has brought foreclosure proceedings against the concern. Municipal ownership is favored.

Utica Company Publishes New Monthly

The Utica Gas & Electric Company has issued the first number of its new monthly publication, "The Flash." This is designed to be the house organ, with news of interest to the employees and with feature articles designed to help them in their work.

The first issue contains an account of the formation recently of the Utica Gas & Electric Club, and tells of its purposes and plans. Other articles are of interest to the sales department, commercial department, base ball fans, and there are a number of personal items.

City to Buy Gas Plant

According to a petition filed with the railroad commission, the city of Coalinga, Cal., is prepared to purchase the plant of the Coalinga Gas & Power Company. The petition, which comes from the power company, sets forth that the city and the corporation have agreed on a purchase price of $50,200, payable in sixteen semi-annual payments of $3,137.50. The commission is asked to approve the sale.

Hartford (Conn.) Company Issues New Stock

The Hartford City Gas Light Company will increase its common stock from $1,250,000 to $1,750,000, both common and preferred stockholders being given the chance to subscribe to one new share of stock for each four shares already held. These rights will expire July 6, and they go to stockholders of record June 16. The new stock is to be paid for as follows: 50 per cent Aug. 6; 50 per cent October 6.

Niagara Falls Company Required to Reduce War-time Rate

Not Required to Improve Service

The Niagara Falls Gas & Electric Light Company must decrease the present rates it is charging for gas, but the reduction will not quite restore the old rates in effect before the existing increased rates went into effect last fall. The company is not required to improve its service, however.

The old rate of the gas company was $1.90 per 1,000 cu. ft., with 20 cents discount for payment of bills before the tenth of the month, leaving a net rate of $1.70 per 1,000 cu. ft. This was increased to the present rate of $2.20 per 1,000 cu. ft. with a ten per cent discount for payment before the tenth of the month, leaving the net rate $1.98 per 1,000 cu. ft. The commission's decision directs that the rate be restored to $1.90 per 1,000 cu. ft., and that a discount of 15 cents flat for prompt payment be given, leaving the net rate $1.75.

Westchester Company Applies for Increased Rate

The Westchester Lighting Company, of Mt. Vernon, N. Y., which supplies gas to Yonkers and electricity and gas to many communities in Westchester County, New York, has filed with the Public Service Commission of the Second District, in Albany, a schedule of new prices for gas which it wishes to put into effect. This action means an increase in the price of gas for domestic consumers, and it is probable that every section in the county will be affected. On behalf of the company, it is pointed out, as an explanation of the proposed higher schedules, that the manufacture of gas and electricity cost the manufacturers almost double what it did years ago. The price of coal and oil has been increased to the large purchaser in the same proportion as it has to the small consumer. Within the past few years the price of skilled labor has increased 80 per cent and that of unskilled labor even more than that percentage. Government ownership or control of railroads, telephone and telegraph wires resulted in an almost immediate increase in rates, due to the higher cost of labor and commodities. It was found that if the service was to be maintained at the same standard, rates would have to be raised.

Utility Expert Declares 5 to 7 Cents per Cu. Ft. Should Be Added to Manufacturing Cost for Depreciation

Major W. G. Pratt, in charge of utilities at Camp Grant, testified before the State Public Utilities Commission that from 5 to 7 cents per 1,000 cu. ft. should be added to the manufacturing cost of gas to cover the depreciation of the plant and equipment. Major Pratt said he had been engaged in valuing gas plants for rate-making purposes in a number of cities, and believed a depreciation charge of 5 cents per 1,000 cu. ft. to be the minimum. Such a depreciation allowance for the Peoples Gas Light & Coke Company would be more than $1,000,000 per year.

"The proportion of charge for depreciation would be less in a large plant than in a small one," he said, "but I do not believe it would in any case be less than 5 cents per 1,000."

Bill Introduced to Repeal 10-Cent Penalty Law in District of Columbia

Fitzgerald of Massachusetts has introduced in the House a bill to repeal the law which permits the Washington (D. C.) Gas Light Company to impose a penalty of 10 cents per 1,000 cu. ft. of gas consumer if bills are not paid within ten days of rendition. Mr. Fitzgerald says that in other communities gas companies give a cash discount for prompt payment of bills. The fact that the gas company is protected against loss by a cash deposit, Mr. Fitzgerald thinks, should be sufficient, and he contends that the 10 per cent penalty in unjust.

The Public Utilities Commission of the District holds that this action of the company is in line with acts of Congress governing the gas rates in the District of Columbia.

Cleveland Gives East Ohio Company New Franchise

The new franchise recently entered into by the city of Cleveland, Ohio, with the East Ohio Gas Company became effective on June 16. The franchise calls for a minimum increase of five cents a 1,000 cu. ft. and greater increases when more than 5,000 cu. ft. of gas is used monthly.

Conserving Gas by Increasing Rate Not a Theory

President Daly of East Ohio Gas Company Says It Has Been Proved By Actual Test

Universal increases in the price of gas are necessary in order to conserve the fast dwindling supply, M. B. Daly, president of the East Ohio Gas Company, said, correcting an impression which followed a mistaken report of his address to the Chamber of Commerce of Cleveland, Ohio.

"It is true the company is not expecting an increased profit as an increase in price means the sale of proportionately less gas," Mr. Daly said. "But the only way to cut down the consumption is to increase the price. This is not a theory. We have found by actual test that the higher price results in a proportionate saving. This in confirmed by a report of the director of natural gas of the United States fuel administration, T. B. Gregory."

An increase in the price of gas in the end will result in a saving to the public, Mr. Daly says. This paradox he explains by saying that the gas company might continue to maintain the same rates, or nearly the same rates, as at present and thus use up the whole visible supply of gas in three years. At the end of that time it might supply artificial gas, just half as good in heat value as natural gas, at $1.25 a 1,000 cu. ft. But by cutting down consumption the fixed amount of gas available may be spread out over perhaps ten years, with the result that while people will pay more for gas for those ten years than they are now paying they would not pay as much as they would for artificial gas for most of the period. The aggregate saving by such a policy, Mr. Daly computes, at $6,000,000.

State of Kansas Conserving Gas

According to a report of A. J. Deischer, chairman of an inspection committee, in the State of Kansas, there is not much gas being wasted at the wells by blowing. They have felt the inconvenience of gas shortage, and the operators appear to have a higher regard and co-operate toward conservation. Although these fields are very closely drilled, and must decline rapidly no great wastage is occurring.

Fall River Company Advances Price of Gas

An increase in the price of gas, to be effective on all bills rendered on and after July 12 is announced by the Fall River Gas works Company, of Fall River, Mass. A notice to this effect has been sent to Mayor James H. Kay and to the Board of Aldermen. It has been decided to increase the rate for all gas sold after June 12, 10 cents per 1,000 cu. ft., so that the maximum rate will be $1.10 gross and $1,05 net per 1,000 cu. ft.

Increased costs of labor and coal and increased taxes are given as the reason for the increase, which is declared to be of an emergency character, to be reduced accordingly as the net earnings of the company increase through decreases in the costs of materials, labor and taxes. It is claimed by the company that if no increases were made the net earnings of the company for 1919 would be at least $46,000 less than in 1918, when they were entirely inadequate to enable the company properly to maintain its plant, provide for depreciation and pay a reasonable return on the investment.

Brazil Gas Asks Increase

The Brazil Gas Company has filed a petition with the Indiana Public Service Commission, asking that body to grant permission to increase the present rates to $1.75 on 1,000 ft. of gas the maximum that may be charged by the company under its franchise. The company is at present selling on a sliding schedule under which $1.50 is the maximum gross rate and $1.40 the minimum net rate and a minimum of $1 per month.

Court Authorizes Sale of Lititz Gas Company

Stockholders having petitioned the Lancaster Trust Company as trustee of $100,000 mortgage to institute foreclosure proceedings against the Lititz, Manheim and Ephrata (Pa.) Gas Company, the court has authorized the trust company to sell the property at public sale. This consists of plants at Lititz and Manheim and nine miles of connecting pipe line between Lititz and Ephrata.

The company is now in the hands of receivers—G. Grabill Diehm, Lititz, and Charles H. Barritt, Philadelphia. It has defaulted interest payment since October, 1918.

Kay County Gas Purchases 150,000 Acres Territory from Indians

The Kay County Gas Company stockholders yesterday voted to increase the capital stock from $1,000,000 to $10,000,000 and began preparations for drilling many gas wells and laying pipe lines into the Osage Nation. The increase in capitalization of the Kay County Gas Company followed the purchase by its management on June 6 of 150,000 acres of gas territory from the Osage Tribe of Indians. This enormous gas territory, the last of the gas rights in the Osage, was taken by the new gas company at a bid of over $600,000. The company has already obtained possession of 200,000 acres of gas leases from the Osage Tribe of Indians. This company was purchased about seven months ago by the Marland Refining interests of Ponca City, Oklahoma.

E. W. Marland, president of the Kay County Gas Company, has announced that he will attempt to hold this last gas area for the use of cities of Oklahoma. Negotiations have been entered into with cities for the furnishing of their entire gas supply and an influx of factories to obtain advantage of abundant cheap fuel is expected in this section of Oklahoma.

Personal Notes

Alfred J. Diescher Organizes New Oil Company

Alfred J. Diescher, who recently resigned as head of the oil and gas operation of the Empire Companies (the Doherty oil organization), has organized the Emerald Oil Company, incorporated in Delaware, with authorized stock of $3,000,000 common and $7,000,000 of preferred shares. Three million dollars of common and $2,000,000 of preferred stock is outstanding. The chief properties of the new company are in Kansas and Oklahoma. Much of the business of the new company will be carried on through Kansas City. There is an operating office in Winfield, Kansas. Mr. Diescher built up the Empire Gas & Fuel Company within a period of five years, from no oil production to one of the largest oil producing companies in the world, and also one of the largest refining and pipe line organizations. He will have associated with him former officials of the Empire companies, among whom is Everett Carpenter, chief geologist. The new company already has in excess of seventy thousand acres of leases in Kansas, Oklahoma, Texas and Louisiana and has strings of tools on different tracts. Last week it proved up a new oil pool at Eureka, Kansas, in Greenwood County, with a 340-barrel well. It has leases in the Osage country in Oklahoma. The new company has been financed without any formal offer to the public and without any underwriting. It reports resources in excess of $1,000,000 over all liabilities, with which to begin development of its properties. Officials say it is the intention of the company to develop rapidly for large production, after which the plans are for building a modern refining plant.

E. H. Gay Buys St. Albans Gas Light Company at Auction

The St. Albans (Vt.) Gas Light Company was hold at auction to E. H. Gay, of Boston, who represents holders of an $80,000 bonded indebtedness on the property. The price was satisfactory to the bondholders, but the amount was not made public. The new company will be known as the St. Albans Gas Company and Mr. Gay will be in active control. This is the first step to reorganizing the company, as it is intended to enlarge and extend the mains and improve the property generally.

H. W. Steele, for five years superintendent of the Gas & Electric Departments of the El Reno division of Oklahoma Gas & Electric Company, has been appointed general manager of the Gas & Electric Departments at Muskogee.

Frederick McDonald, superintendent of Donald McDonald, made an address in Albany, N. Y., at the weekly luncheon of the Rotary Club, on "Manufacturing of Gas Meters."

J. G. Bourus, manager of the Puget Sound Gas Company, Everett, Washington, has been appointed editor of the "Log," the official paper of the Everett Rotary Club.

Thos. B. Inglis has been appointed assistant manager of the Securities Department of Oklahoma Gas & Electric Company, Oklahoma City, Okla.

Col. Mechem Makes Plea for Conservation of Natural Gas

A strong plea that the authorities and the people directly interested take steps to conserve the natural gas supply of this section was made by Col. H. C. Mechem in an address before the Fort Smith (Ark.) Civics Club. Colonel Mechem has given the subject of natural gas more than the ordinary study for some time past, and his remarks made an apparent impression upon his hearers, especially as he pointed out the very great waste, economically and financially, if conservation steps are not taken.

"It is not necessary to argue with those who have used natural gas for domestic purposes about its superiority to every other fuel," he said. "In heat units, safety and convenience it ranks easily first. No argument can make more plain that a community which can obtain natural gas for fuel in the home should do so. No individual or community which has once used natural gas as a domestic fuel ever willingly accepts any substitute for it. There are many communities in this country now paying from 25 cents to $1 per 1,000 cu. ft. for natural gas and clamoring to keep it.

George W. McEwan has been elected president of the Rotary Club of Amsterdam, N. Y., which has just been organized.

M. L. Hibbard, general manager of the Union Light, Heat & Power Company Fargo, N. D., was appointed delegate to the National Convention of Rotary Clubs at Salt Lake City.

George F. Reed, cashier of the Oklahoma Gas & Electric Company of Oklahoma City, has been elected secretary of the Apollo Club.

H. Earle North, manager of the contract department of the Oklahoma Gas & Electric Company, has been elected vice-president of the Apollo Club.

Earl Jones, of the Oklahoma City division of the Oklahoma Gas & Electric Company, has been appointed superintendent of the gas and electric departments of the El Reno division of the company, to succeed H. W. Steele.

Construction Notes

Gary, Ind., Company Erecting New $300,000 Holder

The new giant gas container being erected by the Gary Heat, Light & Water Company, just north of the Indiana Belt Line railroad tracks is two-thirds completed and will be ready for use on Thanksgiving day. This will be the biggest gas tank in the State with the exception of one at Indianapolis. When completed it will be 172 ft. in heighth, 155 ft. in diameter and wil hold 2,000,000 cu. ft. of gas. This will be large enough to supply a city of 250,000 population, an official of the Gary Heat, Light & Power Company said. The big tank with other renewals that are being made, will cost $300,000. In addition to the big gas tank the company is installing a new boiler, a new booster, a new purifier and a new meter. It will practically be a new plant, when completed.

Joplin Gas Company Spending $200,000 on Improvements of Mains

Installation of new gas mains in Joplin (Mo.) estimated to approximate an expenditure of $200,000 has been started by the Joplin Gas Company, according to Chauncey W. Smith, superintendent. A gang of fifty workmen are busy tearing out old mains and installing new ones in portions of the city where they are needed. The pipe lines are of three, five and eight inch dimensions. Many of the men engaged in the work are returned soldiers, who are given the preference of employment by Superintendent Smith.

Wisconsin Public Service Company Spending $60,000 in Plant Improvement

Through the decision of the officials of the Wisconsin Public Service Company in consultation, from $50,000 to $60,000 will be spent upon the gas plant which will bring it up to a point that will guarantee a maximum supply of gas for several years to come, and will make the plant one of the best and most up to date in the State. A total of $50,000 will be spent in improving the retort and gas producing equipment itself and an immense compressor pump capable of keeping the gas compression up to any required standard will also be placed. Up to the present time the company has used only coal for producing gas but with the added equipment the plant will be changed so that gas can be made from gas oil as well. This change will be particularly useful during shortages of coal or delays in obtaining the needed supplies. Gas from both products will be made at various times. In using oil the plant will have no by-products such as coke and some of the other articles taken from coal, but this will not mean that the company will discontinue the sale of coke as the coal used will be sufficient to supply any demand for coke that may be made.

New Orleans Committee Working on Estimate of Artifical Gas Plant

Superintendent George G. Earl of the sewerage and water board of New Orleans, La., has agreed to furnish the natural gas committee with estimates of the cost of a complete gas distribution system and artificial gas plant.

This agreement came after a conference Superintendent Earl held with Mayor Behrman, and it is to furnish the gas committee with a foundation of figures upon which to base a proposition for getting natural gas into New Orleans.

Springfield, Mo., Company Erecting Addition to Purification System and a New Coal Trestle

A number of improvements of the property of the Springfield Gas & Electric Company, of Springfield, Mo., are to be made soon, it was stated by E. C. Deal, general manager. One of the improvements will provide additional facilities for the purification of gas at the gas plant. Machinery for this addition to the purification system has been ordered and will be installed immediately upon its arrival here. The company has also authorized the building of a trestle by which coal will be conveyed from the railroad tracks to its coal sheds with much less expense. A concrete catch basin is also to be installed to prevent any escape of tar and oil from the gas plant into the Jordan creek.

San Diego Company Triples Capacity of Escondido Plant

The San Diego (Cal.) Consolidated Gas & Electric Company has recently completed, at considerable expense, the reconstruction of the electrical unit of the plant at Escondido, making of it one of the best on the coast. The company is just now furnishing the installation of a gas holder at a cost of $15,000, whose holding capacity is 22,000 cu. ft. The holder is additional to the 10,000 cu ft. tank which has served in the past and which will continue to be used in connection with the new holder the two tanks giving a total of 32,000 cu. ft. A motor-driven exhauster is being added to the equipment, and as one of the means of purifying the gas an oil scrubber is being installed. The new work will be completed before July 1, at which time Escondido will have a modern gas plant, operating in connection with the electrical unit of the San iDego Consolidated Gas & Electric Company, with a capacity for supplying gas to a city of 5,000 to 10,000 population.

Lone Star Company Building 250 Miles of New Pipe Line

The Lone Star Gas Company, of Fort Worth, Texas, has initiated construction of a 12¾ in. pipe line between Keyesdale in the Walters field, Oklahoma. to Petrolia, where the line will connect with the main 16-in. line of the company, which taps Fort Worth and Dallas. The new line will greatly increase the natural gas supply of both cities. Pipe for the new line is now being delivered. The new line will give the Lone Star two lines into Oklahoma. The Lone Star also will build 250 miles into the gas fields of western Texas. This main line will be a 10-in. one and tap towns and cities that will add 20,000 new consumers to the concerns' list.

Manchester Company Laying New Mains

The Manchester (Conn.) Gas Company has been at work in different parts of the town extending their gas mains. Because of the war the company was not able to secure pipes for the extension of their lines, but this ban having been lifted, the extensions are now being made and others are being planned.